

Exploring Biomes

Lesson 1: Mapping Biomes

LESSON OVERVIEW

In this lesson, students will look at satellite maps of the world, identify similarities among various regions, and attempt to divide the world into biomes based on these similarities.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Climate is the primary characteristic used to divide the world into biomes.

OBJECTIVES

Students will:

- Interpret and compare maps containing different kinds of data.
- Classify world regions based on similarities in climate.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Science	Mathematics	Technology
6	S1-C3-01; S4-C3-01	S1-C3-01	None
7	S1-C3-01	S1-C3-01; S4-C4-08	
8	S1-C3-01; S1-C3-05	S1-C3-01	
High School	S1-C4-04; S6-C2-15	S1-C3-01	None

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 1 day (45 minutes)

MATERIALS

- Picture of polar bear
- *Mapping Biomes* worksheet (one per student)
- Markers, crayons, or colored pencils
- Rulers
- Calculators



TEACHER PREPARATION

- Make a copy of the *Mapping Biomes* worksheet for each student.
- Gather enough markers (or crayons or colored pencils), rulers, and calculators for students to use. They can share, if necessary.

SUGGESTED PROCEDURES

1. Show the students the picture of a polar bear. What animal is this? Explain that you have lived in Arizona for a long time and have never seen one in the wild. Why not? Lead this into a discussion about how most plants and animals can live only in certain areas of the world.
2. Introduce the concept of a *biome* by explaining that scientists have divided the world into a number of large geographic regions called biomes. They classify the biomes according to the kinds of plants and animals that can live there. The factor that usually determines which plants and animals can live in an area is climate, hence the idea that polar bears in the wild live in cold regions.
3. Hand out the *Mapping Biomes* worksheet. The students will now have the opportunity to become scientists and map the biomes of the Earth based on climate. Explain that the worksheet shows maps developed with data collected by NASA.
4. Point out that although the data are collected continuously throughout the year, students have been given maps of January 2002 and July 2002. Why were these months selected? They represent typical winter and summer months.
5. Students use the maps to divide the world into five to eight biomes. To do this they must look for areas that have similar temperatures and rainfall. These areas should probably be classified in the same biome, even if they are in different parts of the world. It should be noted that the students have been given maps for vegetation and primary productivity. Although these are not temperature or rainfall, they are indicators of climatic conditions. If you prefer, you could have students use only the maps for temperature and precipitation.
6. When students have determined how they will divide the world, they must color the biomes on the map provided and answer the questions.
7. Collect the worksheet when students have finished.

ASSESSMENT

- *Mapping Biomes* worksheet

EXTENSIONS

- Students can use reference materials to help them find one animal and one plant that live in each of the biomes, and identify adaptations that allow them to survive.



*An online exploration
of the biotic
communities of
Arizona with an
emphasis on
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Technology*

Appendix A: Arizona Department of Education Standards – Full Text

Science Standards

Grade	Strand	Concept	Performance Objective
6	1	3 – Analysis and Conclusions	1 – Analyze data obtained in a scientific investigation to identify trends
	4	3 – Populations or Organisms in an Ecosystem	1 – Explain that sunlight is the major source of energy for most ecosystems
7	1	3 – Analysis and Conclusions	1 – Analyze data obtained in a scientific investigation to identify trends
8	1	3 – Analysis and Conclusions	1 – Analyze data obtained in a scientific investigation to identify trends 5 – Explain how evidence supports the validity and reliability of a conclusion
High School	1	4 – Communication	4 – Support conclusions with logical scientific arguments
	6	2 – Earth’s Processes and Systems	15 – List the factors that determine climate (e.g., altitude, latitude, water bodies, precipitation, prevailing winds, topography).

Mathematics Standards

Grade	Strand	Concept	Performance Objective
6	1	3 – Estimation	1 – Solve grade-level appropriate problems using estimation
7	1	3 – Estimation	1 – Solve grade-level appropriate problems using estimation
	4	4 – Measurement – Units of Measure – Geometric Objects	8 – Compare estimated to actual lengths based on scale drawings or maps
8	1	3 – Estimation	1 – Solve grade-level appropriate problems using estimation
High School	1	3 – Estimation	1 – Solve grade-level appropriate problems using estimation



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Appendix B: Worksheets and Overheads

The pages that follow contain the worksheets listed below:

- A. *Polar Bear Picture* – A photo used to get students thinking about adaptation to environments (1 page)
- B. *Mapping Biomes* worksheet – A tool to help students learn how scientists divide the world into biomes (2 pages)

